UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
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F205

STUDENT OUTLINE

CALIBRATION CONTROL PROGRAM

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given the billet of maintenance management chief, applicable Consolidated Memorandum Receipt (CMR), and the references, identify calibration control procedures within a maintenance commodity section, to ensure all equipment requiring calibration is calibrated within the required time frame and per the references.

2. Enabling Learning Objectives: Given the billet of maintenance management chief, applicable Consolidated Memorandum Receipt (CMR), and the references, identify:

    a. Inventory requirements.
    b. Calibration control categories.
    c. Different calibration control systems.
    d. The purpose of a calibration control programs.
    e. Characteristics of calibration control program.
    f. The responsibilities associated with the calibration control program.
    g. Calibration labels, seals, and tags.
    h. Selected information on a calibration label, seal, and tag.
    i. New equipment requirements for calibration.

3. To ensure all equipment requiring calibration is calibrated within the required time frame and per the references.

OUTLINE

1. SUPPORT EQUIPMENT AND TMDE

a. Definition. As a maintenance resource, the term "support equipment and TMDE" includes tool sets, kits, chests, hoists, jacks, stands, and TMDE.

b. Requirement. The unit MMO will establish tool control and calibration control programs for the unit. Control of tool sets, chests, and kits procedures will be established and maintained per appendix D of MCO P4790.2_.

c. Procedures. In developing the specific control procedures for the unit, the MMO must establish a balance between the need for control of support equipment and TMDE to avoid loss, and the need for access to increase productivity. This same compromise must be made for calibration, in that the need for TMDE must be balanced against the calibration requirements.

d. Maintenance. Support equipment and TMDE also require PMCS and corrective maintenance. Defective support equipment and TMDE can be a safety hazard and detrimental to the unit's readiness. During scheduled inventories, support equipment and TMDE will be checked for cleanliness and serviceability. Unserviceable items will either be repaired, evacuated for repair, or disposed of per SMR codes and appropriate directives.

(1) Operator PMCS combined with an operational check per equipment technical manuals constitutes organizational PMCS.

(2) Intermediate PMCS conducted by the calibration laboratory and unit's authorized intermediate maintenance on test equipment will be accomplished during calibration.

(3) Support equipment and TMDE require no PMCS scheduled.

e. Calibration. Calibration control will be established and maintained per appendix D of MCO P4790.2_. The method used for calibration control must be included in the MSC MMSOP.

(1) The use of calibration categories is important to the effective use of calibration laboratory resources. Calibration categories are explained as follows:

(a) Calibrated applies to instruments with all ranges and functions tested and found within applicable tolerances.

(b) Special Calibration applies to instruments with only a portion of ranges and functions tested and found within applicable tolerances.

(c) Inactive applies to instruments, which will not be used to make measurements of a non-critical nature or for instructional purposes only (some instructional equipment will require calibration or special calibration).

(2) Test equipment will be assigned the best calibration category, and the requirement will be established to allow a balanced schedule. A balanced schedule will ensure that all of the unit's test equipment of a specific type is not in for calibration at the same time and will provide continuous calibrated equipment support.

2. MAINTENANCE FUNCTION-CALIBRATION

a. The Calibration Program. The calibration program is conducted per MCO P4733.1 and TM 4700-15/1_. Calibration laboratories are designated by HQMC and are authorized the necessary equipment to perform calibration and repair operations. The majority of TMDE used in performing maintenance and certain other measuring equipment require periodic calibration. Calibration production is contained in appendix F of MCO P4790.2_.

b. Using Unit Responsibility. The using unit is responsible for promptly submitting its TMDE for calibration. Calibration control procedure will be established and maintained per TM 4700-15/1_ and appendix D of MCO P4790.2_ to ensure that all calibration is current. The MSC MMSOP will specify a calibration control point for the units and the method of control. The calibration of TMDE must be scheduled so that sufficient assets are on hand to preclude the unit from losing required test capabilities. In the maintenance process, the using unit ensures accurate checks and measurements where accuracy is required by using only test and measuring devices with current "Calibrated" or "Special Calibration" labels affixed and by periodically cross-checking these devices between calibration. A periodic evaluation of TMDE is required of the using unit. The purpose of evaluating each item of TMDE is two-fold. The first is to ensure that instruments used in measurement applications where accuracy is important are being calibrated on a periodic basis at established intervals. Without such calibration, the instrument user cannot be sure that the indications received from instruments are accurate.

The second reason for evaluating each instrument is to reduce the calibration workload, thereby reducing the cost of calibration and turnaround time. This is achieved as follows:

(1) By determining the instruments not being used within their full capability (only some ranges and functions are used) in this case “Special Calibration” would be appropriate and only those capabilities would be calibrated.

(2) By determining instruments being used in applications where accuracy is of no importance; in this case “Calibration Not Required (CNR)” would be appropriate.

(3) By determining instruments not being used or are not expected to be used in the foreseeable future (one calibration cycle/interval or more), in this case "Inactive” would be appropriate. Using organizations must follow through on the preceding determinations made during their evaluation, by requesting “Special Calibration” when the instrument is submitted for calibration, or by requesting the “Inactive” and “Calibration Not Required” labels from the supporting calibration laboratory.

c. Calibration Laboratory Responsibility. Intermediate maintenance activities designated as calibration laboratories perform equipment repair and calibration for supported units within their authorized capability and forward equipment to higher EOM when repairs exceed their authorized levels. The calibration laboratory aids in the management of the calibration program by projecting calibration requirements and resources and by identifying the need for additional capability. They also provide the using unit intra-/inter-service support and use commercial contracts, as necessary, to satisfy calibration demands.

d. Infantry Weapons Gage Calibration Exchange Program (IWGCEP). Infantry weapons gages calibration control records will be maintained per TM 4700-15/1_ and inducted for calibration per TI-4733-15/11.

3. CONTROL OF TOOL SETS, CHESTS, AND KITS AND CALIBRATION OF TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE)

a. Introduction. MCO P4400.150_ and MCO 4733.1 require the unit commander to establish procedures for the control of tool sets, chests, and kits and the calibration of TMDE.

(1) The requirement for inventory of tools sets, chests, and kits is as follows:

(a) Tools sets, chests, and kits that are issued to an individual where locks and a secure storage area are provided will be inventoried at least semiannually.

(b) Tools sets, chests, and kits that are securely stored will be inventoried at least annually.

(c) Tools sets, chests, and kits that are issued to a responsible officer (RO) will also be inventoried upon change of RO.

(2) MCO 4733.1 requires that all test and measuring equipment be in one of four calibration status categories: equipment requiring calibration, equipment requiring special calibration, equipment not requiring calibration, or equipment that is inactive. Calibration status of equipment must be kept current.

b. Calibration Control Program

(1) Identify. Using the unit's T/E and allowance list (to include special allowance), the MMO and maintenance personnel must identify all items of TMDE authorized the unit per TM 4700-15/1_.

(2) Locate. All TMDE in the measurement areas of electrical/electronic, physical/mechanical, automotive/motor transport, radiac, and ordnance within the unit should be located. As the equipment is located, the section holding the equipment must prepare a calibration control record per the TM 4700-15/1_. During the search to locate all TMDE, it must be kept in mind that many items are component parts; for example, pressure gages, meters, micrometers, etc.

(3) Inventory. When all equipment has been located, the MMO and maintenance section representatives (to include NBC) should match the equipment, calibration control records, and the T/E and unit allowances to ensure that all items have been accounted for and are complete.

(4) Schedule. The end result of scheduling is the establishment of calibration due dates. However, when preparing the calibration schedule, the section/unit must ensure that sufficient assets are on hand for day-to-day operations.

(a) There are four categories of calibration as shown in the following. All TMDE should be assigned to one of those categories and have a current label affixed. Assignment should be based not only on the equipment's present use but also on requirements to task organize, form detachments, or field contact teams.

1. Equipment Requiring Full Calibration. Those items which must be accurate across their full range of measurements.

2. Special Calibration. Those items which must be accurate across a portion of their full range of measurements. Items labeled "Special Calibration" will have a tag affixed indicating limitations.

3. CNR. Those items, which are, used for other than quality or quantity measurements and, therefore, the accuracy of the measurement is not a factor.

4. Inactive. Those items not required for use for at least their next calibration period but which are still required for future contingencies.

(b) Examples are provided in MCO P4790.2_, appendix D, to assist in the evaluation of TMDE.

(c) Calibration Scheduling

1. Calibration scheduling is automatic; the next scheduled calibration period is that date entered on the calibration label affixed to the equipment by the calibration facility. Equipment must be promptly turned in for calibration. There are exceptions to this noted in the following:

a. Due to repair, new equipment, training exercises, etc., several items of the same type of equipment may come due for calibration at the same period.

b. Training/actual commitments may require a change in calibration categories.

c. An item due for calibration cannot be turned in for calibration as it is mission-essential, and its replacement has been delayed in its return from the calibration. This instance presents a problem, as the unit must use an item whose accuracy is suspect. This situation should be avoided when possible. Efforts should be made to hasten the return of the replacement item from calibration.

2. The preceding exceptions as well as poor management can cause uneven calibration scheduling. This can cause a reduced capability for the unit to perform its mission by having the majority of a specific type of equipment due for calibration during the same period.

4. SUPPORTING FACILITIES. Calibration facilities are designated by Headquarters, Marine Corps and are authorized the necessary equipment to perform calibration and repair operations.

a. The Infantry Weapons Gage Calibration Exchange Program (FWGCEP) was developed at the Marine Corps Logistics Base (MCLB), Albany, GA to provide Marine Corps units a way to obtain calibrated infantry weapons gages.

b. Calibration support is received from Marine Corps calibration facilities (ELMACO and supporting FMF units) where available. In the event there are no local Marine Corps facilities, calibration should be done by the local calibration facility (Army calibration facility, civilian calibration facility, etc.).

5. RESPONSIBILITIES. Marine Corps organizations assigned test, measurement, and diagnostic equipment (TMDE):

a. Identification

(1) Calibration Requirements

(a) Annual inventory of test, measurement, and diagnostic equipment (TMDE):

1. All T/E items and special allowances.

2. Components of sets, chests, and kits.

(b) Equipment listed in Fed Log with an operational test code (OTC) of 3 requires calibration.

(c) Contact the calibration facility.

(2) PM Requirements

(a) Organizational PM. TMDE will be continuously maintained in a clean and complete condition with functionally clean air filters and functionally charged batteries if so equipped. Any missing components must be on a valid requisition. This procedure combined with an operational check of the equipment in accordance with the equipments technical manual shall constitute organizational PM for all categories of TMDE and requires no scheduling. TMDE equipped with batteries will have them removed while designated "INACTIVE".

(b) Intermediate PM. Intermediate PM is performed by the calibration facilities and units authorized intermediate maintenance on test equipment. This PM is normally conducted during calibration of the equipment and requires no scheduling. Intermediate PM will be conducted in accordance with the applicable TM.

(c) Special Requirements. Items designated as calibration not required (CNR) and inactive will have their status reviewed and validated annually. The annual TMDE inventory provides an excellent opportunity to identify TMDE eligible for designation as CNR/Inactive and to accomplish a portion of the status validation scheduling equipment. At the end of a three-year inactive period, units will reevaluate the need to retain the equipment as well as the requirement to calibrate.

b. Submission. Preparation of a second echelon ERO for induction of TMDE into the calibration lab is optional in accordance with TM 4700-15/ 1_.

(1) Calibration due date (category code K)

(2) New equipment received (category code K)

(3) Non operational - needs repair

(a) Non reportable (category code P)

(b) Reportable (category code M)

6. THREE SYSTEMS FOR CALIBRATION CONTROL

a. Chart System. The calibration control record can be made up as a wall chart or on standard size paper with this system.

(1) If made up as a wall chart, cover with acetate as shown in TM 4700-15/ 1_.

(a) Entries in first four columns should be made semi-permanent.

(b) Entries in the last three columns (those subject to change) should be made with a grease pencil to facilitate updating.

(2) A chart can be maintained on standard size paper for retention in a loose-leaf notebook (Same as wall chart).

(a) Entries in first four columns should be typed and inserted into a document protector.

(b) Entries in last three columns should be made with a grease pencil to facilitate updating.

b. Card Index System

(1) Utilizing the annual inventory, prepare a (NAVMC 11052) card for each item of equipment possessed.

(a) Determine and enter the header information

(b) Calibration due date (For items designated as “INACTIVE” or “CNR” enter the date of the next annual validation.

(c) Date Calibration performed (For items designated as “INACTIVE” or “CNR”, enter the date of the annual validation. For calibration categories other than “INACTIVE” or “CNR”, use of this field is optional.

(d) Remarks column is to be used as follows:

1. Indicate items designated as “INACTIVE” or “CNR” and the date so designated.

2. Indicate items designated as “SPECIAL CALIBRATION” and parameters of that calibration.

3. Enter ERO/document/voucher number, in pencil, for items inducted for calibration/repair.

4. Enter the location when the item is deployed.

5. Enter any additional amplifying information.

(2) Prepare a suitable file with index guides as follows:

(a) Two years of index header cards, of different colors, covering the months of the year,

(b) INACTIVE

(c) CAL NOT REQ

(d) AT CAL FAC

(3) Using the card index system

(a) File cards using the calibration due date as the determining factor;

(b) File the cards for inactive items in the INACTIVE section by the status validation due date;

(c) File the cards for all items which do not require calibration by equipment operational check (EOC) or PM in the CAL NOT REQ section;

(d) Submit items due for Calibration (See instructions in TM 4700-15/1_).

(4) Preparation instructions for recording CNR/INACTIVE items on card/chart:

(a) Date Cal Performed. Enter the date status validation occurred.

(b) Date Cal Due. Enter the date the next status validation is due.

(c) Remarks. Indicate designation as CNR/inactive and the date.

c. Automated Calibration Report. Units are authorized to make use of locally developed automated control systems in lieu of the manual methods as long as the basic data required by the manual are incorporated into the program.

7. LABELS, SEALS, AND TAGS

a. Labels

(1) Labels come in three sizes:

(a) Large (1 3/4" x 1 1/4")

(b) Miniature (1" x 3/4")

(c) Sub miniature (3/8" x 5/8")

1. The larger label of the same designation will take precedence.

2. The smaller labels are designed to be used only when it is impractical to use the larger label.

(2) Calibrated Label, FULL

(a) Color. Black on white.

(b) Intended Use. These labels are affixed to an instrument, which meets all of the requirements set forth in its specifications.

(3) Special Calibration Label

(a) Color. Black on green.

(b) Intended Use. These labels are affixed to an instrument, which receives calibration in some of its ranges only. User may request special calibration. A matching tag will also be affixed which indicates the special areas.

(4) Reject Label

(a) Color. Black on red.

(b) Intended Use. These labels are affixed to an instrument that is returned unserviceable to the user for failure to meet acceptance criteria. The reject label shall

remain on the instrument until it is repaired and calibrated. A tag shall also be attached indicating the failed areas.

(5) Calibration Not Required Label

(a) Color. Orange on white.

(b) Intended Use. These labels are affixed to an instrument, which does not require calibration due to one of the following reasons:

1. Accuracy is of little or no value (i.e., training).

2. Used for relative values only

(6) Inactive Label

(a) Color. Green on white.

(b) Intended Use. These labels are affixed to an instrument that will not be used for an extended length of time (i.e., placed in storage). The instrument must be calibrated before it can be used again.

b. Seals

(1) Marine Corps calibration seals come in one size (2" x 1/2").

(2) Voiding Seal. Calibration void if seal is broken.

(a) Color. Red on white.

(b) Intended Use. To increase confidence in the reliability of TMDE, which has current calibration labels, affixed. Insures that adjustments and components have not been tampered with to the extent that the validity of the calibration can be questioned.

c. Tags

(1) Marine Corps calibration tags come in one size (3" x 6").

(2) Special Use Tag

(a) Color. Black on green.

(b) Intended Use. This tag is attached to instruments, which have special use labels affixed. The appropriate blocks on the tag will be completed to indicate the ranges or functions of the instruments that do not meet all the specifications. It also includes special operating instructions due to any special calibration.

(3) Reject Tag

(a) Color. Black on red.

(b) Intended Use. This tag is attached to instruments which have a reject label affixed. The appropriate blocks shall be completed in detail to indicate the reason for the rejection, suggested corrective action, and any other information, which could be helpful in assisting the user to repair the instrument.

REFERENCES:

1. MCO 4733.1
2. MCO P4790.2_
3. TI 4733-15/1
4. TM 4700-15/1_